ABSTRACT

Myelodysplastic syndrome (MDS) is a clonal disorder of hematopoietic stem cells (HSC). Clinical course of MDS can be divided into several stages; an indolent chronic phase termed "refractory anemia (RA)" or "RA with ringed sideroblasts", and advanced stages including "RA with excess of blasts (RAEB)" and MDS-associated leukemia. Despite a relatively high incidence of MDS, there are few effective means to treat individuals at its advanced stages. DNA microarray would be a useful tool to clarify the molecular pathogenesis of, and to develop novel treatments against, MDS. However, a simple comparison with DNA microarray of bone marrow (BM) mononuclear cells from individuals at distinct stages of MDS would mainly lead to the identification of "pseudo-positive" genes whose expression alterations only reflect the difference in the proportion of MDS blasts within BM. To efficiently analyze the stage-progression mechanism in MDS, AC133 cell surface marker-positive HSC was purified from BM of healthy volunteers as well as 30 MDS patients, and used to compare the expression profiles of 2304 genes by microarray made by the inventor. The inventor succeeded in isolating sets of genes, expression of which was specific to either indolent stage or the advanced ones.